

Application No.: 09/717,068
Reply Dated July 31, 2003
Reply to Office Action of May 8, 2003

Docket No.: 8733.329.00

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the subject application. The Non-Final Office Action of May 8, 2003 has been received and the contents carefully reviewed.

In the Office Action, the Examiner rejected claims 1, 3-5, and 7 under 35 U.S.C. § 103(a) as unpatentable over Harada et al. (U.S. Pat. No. 5,361,152) in view of Yamamoto (JP Pub. No. 59-195222) and Mochizuki et al. (U.S. Pat. No. 5,348,685); rejected claims 6, 12, 14, and 15 under 35 U.S.C. § 103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al.; rejected claims 10, 11, 18, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. and further in view of Kim et al. (U.S. Pat. No. 5,742,370); rejected claims 8, 9, 16, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. and further in view of Abe (U.S. Pat. No. 5,511,591); and rejected claims 2, 13, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. and further in view of Asano et al. (U.S. Pat. No. 4,974,940). The aforementioned rejections are traversed and reconsideration of the claims are respectfully requested in view of the following remarks

The rejection of claims 1, 3, 4, 5, and 7 under 35 U.S.C. § 103(a) as unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. is respectfully traversed and reconsideration is requested.

Preliminarily, Applicants note that, in the outstanding Office Action, the Examiner states "...the examiner notes two differences between the method of *Yamamoto* and that of the present specification: in the present invention, the seal is placed on the first substrate

before the substrates are attached to each other, while *Yamamoto* attaches them and then adds the seal..." (Office Action at 4.)

Applicants respectfully submit, however, the Examiner's interpretation of the present specification attempts to unduly narrow the scope of the present invention. For example, at page 9, lines 8-11, the specification as filed states "...as shown in Figure 4D, a seal pattern 16 is formed at the edges of the lower substrate 10 to prevent leakage of the liquid crystal. Finally, as shown in Figure 4E, an upper substrate 20... is attached to the lower substrate 10 via the seal pattern 16..." Accordingly, Applicants respectfully submit the Examiner's aforementioned interpretation of the present specification is not necessarily an exclusive analysis, prohibiting other renderings of the present invention.

Claim 1 is allowable over the cited references in that claim 1 recites a combination of elements including, for example, "forming a seal material at edges of the first substrate after depositing the liquid crystal material." None of the cited references, including Harada et al., Yamamoto, or Mochizuki et al., singly or in combination, teaches or suggests at least this feature of the claimed invention. Applicants respectfully submit that claims 2-11, which depend from claim 1, are also allowable over the cited references.

To establish a *prima facie* case of obviousness, there must at least be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. See MPEP § 2142. Establishment of a *prima facie* case of obviousness requires there be at least some objective reason to modify the reference. See MPEP § 2143.02.

For the reasons set forth below, Applicants respectfully submit a *prima facie* case of obviousness has not been established with regard to the presently claimed invention.

For example, the Examiner states “[Harada et al.] does not disclose forming a seal material after depositing the liquid crystal material” and relies on Yamamoto to cure the aforementioned deficiency of Harada et al. More specifically, the Examiner cites Yamamoto as disclosing “forming a seal material after depositing the liquid crystal [see the series of steps in Fig. 3].” The Examiner then concludes it would have been obvious to “...use the method of [Yamamoto] in making the device of [Harada et al.], motivated by [Yamamoto]’s teaching that this method makes it possible ‘to remove excessive liquid crystal’ and seal the panel so that ‘the sealing resin is not spread’ and a ‘wide display window can be obtained’ [see p. 5 of the translation].” The Examiner further alleged that the benefits obtained through Yamamoto (i.e., the ability to remove “excessive liquid crystal” and preventing the “sealing resin” from spreading) are advantageous over the “reverse order,” wherein the “reverse order apparently involves “placing the seal down first.” (Office Action at 4.)

In making a determination of obviousness under 35 U.S.C. § 103(a), references applied must be considered in their entirety, including disclosures that teach away from the claims. See MPEP § 2141.02.

Applicants respectfully submit the inventive concept of Yamamoto is directed to overcome the disadvantages of the prior art concept illustrated in Figure 1 of Yamamoto (see page 3 of the translation of Yamamoto). The prior art concept of Yamamoto includes a liquid crystal panel composed of two glass substrates 1 and 1’ sealed together using a sealing resin 2 (see page 2 of the translation of Yamamoto). Liquid crystal 3 is injected between the substrates through a sealing hole formed in the sealing material 2 (see page 3 of the translation of Yamamoto). Use of the prior art concept illustrated in Figure 1 of Yamamoto is disadvantageous because “the sealing resin 2 is pressed by two glass substrates 1, 1’ ” and

therefore “the sealing resin 2 is spread by between the glass substrates 1, 1’, resulting in reducing the size of a display window of an apparatus...” (see page 3 of the translation of Yamamoto). Accordingly, the inventive concept of Yamamoto includes a liquid crystal panel formed by placing a “fixed quantity of liquid crystal 3... on the glass substrate 1 (Fig. 3B)... [placing]... the second substrate 1’ on the liquid crystal 3... (Fig. 3C)... [cooling the first and second substrates and liquid crystal] to a low temperature to freeze the liquid crystal (Fig. 3D)... [removing] ...excessive liquid crystal... [and] ...sealing with the sealing resin 6.” (see p. 4 of the translation of Yamamoto).

In light of the teachings of Yamamoto in its entirety (i.e., as a whole), Applicants respectfully submit it can reasonably be understood that the inventive concept shown in Figure 3 of Yamamoto, and the method by which it is formed, is advantageous over the method by which the prior art concept shown in Figure 1 of Yamamoto is formed.

Applicants respectfully submit, however, it cannot be reasonably understood that the prior art and inventive concepts of Yamamoto are fabricated in steps performed in “reverse order.” More specifically, while the prior art concept shown in Figure 1 of Yamamoto does form a sealing resin 2 prior to formation of liquid crystal 3, the prior art concept shown in Figure 1 of Yamamoto is not formed by performing steps in the “reverse order” of the steps required to form the inventive concept shown in Figure 3 of Yamamoto, as implied by the Examiner. Rather, and as described above, the steps required to form the prior art concept shown in Figure 1 of Yamamoto are entirely different from the steps required to form the inventive concept shown in Figure 3 of Yamamoto.

Further, while the LCD of Harada et al. is formed, at least in part, by forming the sealant portion 2 on the substrate 1 prior to forming the FLC composition 3 on the substrate

1, it cannot be reasonably asserted that the methods by which the LCD of Harada et al. and the steps required in forming the prior art concept illustrated in Figure 1 of Yamamoto are the same or even analogous. For example, the LCD of Harada et al. is formed by forming “a curable sealant...onto the periphery of the side of [a substrate] 1, whereby a sealant portion 2 is provided. Then, as shown in FIG. 1b, FLC composition... is ...applied to the portion surrounded by the sealant portion 2, so as to form a coated layer of FLC...” Subsequently, “as shown in FIG. 1c, the other [substrate] 4 which is neither printed with a sealant nor coated with a liquid crystal is placed either in vacuo or at atmospheric pressure in such a way that the side of said [substrate] which has an electrode... faces the side of the [substrate] 1 that includes the coated layer of the ...FLC...” (see, for example, column 3, line 4 – column 5, line 45 of Harada et al.). Accordingly, Applicants respectfully submit the methods disclosed by Harada et al. and the prior art concept shown in Figure 1 of Yamamoto are entirely different.

Therefore, Applicants respectfully submit, that one of ordinary skill in the art would not be motivated to modify Harada et al. using the teachings of the inventive concept illustrated in Figure 3 of Yamamoto because the disadvantages present in the prior art concept illustrated in Figure 1 of Yamamoto, of which the inventive concept illustrated in Figure 3 of Yamamoto attempts to negate, are not present in Harada et al. Absent some objective reason to modify Harada et al., Applicants respectfully submit that Harada et al. and Yamamoto have merely been combined using the claimed invention as a template via impermissible hindsight reasoning.

Accordingly, Applicants respectfully submit a *prima facie* of obviousness has not been established with respect to the claimed invention.

The rejection of claims 6, 12, 14, and 15 under 35 U.S.C. § 103(a) as unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. is respectfully traversed and reconsideration is requested.

Preliminarily, it is noted that claims 12, 14, and 15, along with claim 6, were rejected under 35 U.S.C. § 103(a) as unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. Applicants respectfully, however, claims 12, 14, and 15 do not claim the same combination of elements as claim 6. Accordingly, Applicants respectfully submit it would not be obvious to include any teaching or suggestion found in Yamamoto to claims 12, 14, and 15.

Claim 12 is allowable over the cited references in that claim 12 recites a combination of elements including, for example, “depositing a liquid crystal material on the first orientation film of the first substrate, the liquid crystal material having a viscosity of greater than 100 mm²/sec; ... and heat-treating the liquid crystal material to activate the liquid crystal and have substantially the same characteristics as a liquid crystal material having a viscosity of 20 to 50 mm²/sec.” None of the cited references, including Harada et al., Yamamoto, or Mochizuki et al., singly or in combination, teaches or suggests at least these features of the claimed invention. Accordingly, Applicants respectfully submit that claims 13-19, which depend from claim 12, are allowable over the cited references.

Establishment of a *prima facie* case of obviousness requires that a reasonable expectation of success be present in modifying or combining the references. See MPEP § 2143.02. For the reasons set forth below, Applicants respectfully submit a *prima facie* case of obviousness has not been established with regard to the presently claimed invention.

For example, the Examiner states “[Harada et al.] discloses heat-treating the liquid crystal material to have it change into a nematic phase, in order to render the liquid crystal homogeneous (by lowering the viscosity... [col. 5, lines 21-45].” The Examiner then concludes by stating “...following this interpretation, [Harada et al.]’s heat-treating activates the liquid crystal material to have substantially the same characteristics as a liquid crystal material having a viscosity of 20 to 50 mm²/sec, so [claim] ...12 [is] unpatentable.”

Applicants respectfully submit, however, that simply because Harada et al. discloses “heat-treating the liquid crystal material to have it change into a nematic phase,” it is not logically obvious that the heat-treated liquid crystal material of Harada et al. would “have substantially the same characteristics as a liquid crystal material having a viscosity of 20 to 50 mm²/sec,” as asserted by the Examiner. Applicants respectfully submit that there is no reason or motivation found in either the cited references or in the knowledge generally available to one of ordinary skill in the art required to reasonably expect that one of ordinary skill expect the heat-treated, nematic phase FLC material of Harada et al. to exhibit a viscosity of “20 to 50 mm²/sec,” as asserted by the Examiner. Absent such a suggestion or motivation to modify Harada et al., Applicants respectfully submit that elements have been read into Harada et al. using the claimed invention as a template via impermissible hindsight reasoning.

Accordingly, Applicants respectfully submit a *prima facie* of obviousness has not been established with respect to the claimed invention.

The rejection of claims 10, 11, 18, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. and further in view of Kim et al. is respectfully traversed and reconsideration is requested.

Claims 10 and 11 include all of the limitations of claim 1 as discussed above, and Harada et al. in view of Yamamoto and Mochizuki et al. fails to teach or suggest at least the features of independent claim 1 as recited above. Similarly, Kim et al. fails to cure the deficiencies of Harada et al. in view of Yamamoto and Mochizuki et al. Accordingly, Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness regarding claims 10 and 11 in view of claim 1, as above.

Claims 18 and 19 include all of the limitations of claim 12 as discussed above, and Harada et al. in view of Yamamoto and Mochizuki et al. fails to teach or suggest at least the features of independent claim 12 as recited above. Similarly, Kim et al. fails to cure the deficiencies of Harada et al. in view of Yamamoto and Mochizuki et al. Accordingly, Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness regarding claims 18 and 19 in view of claim 12, as above.

The rejection of claims 8, 9, 16, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. in view of Abe is respectfully traversed and reconsideration is requested.

Claims 8 and 9 include all of the limitations of claim 1 as discussed above, and Harada et al. in view of Yamamoto and Mochizuki et al. fails to teach or suggest at least the features of independent claim 1 as recited above. Similarly, Abe fails to cure the deficiencies of Harada et al. in view of Yamamoto and Mochizuki et al. Accordingly, Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness regarding claims 8 and 9 in view of claim 1, as above.

Claims 16 and 17 include all of the limitations of claim 12 as discussed above, and Harada et al. in view of Yamamoto and Mochizuki et al. fails to teach or suggest at least the

features of independent claim 12 as recited above. Similarly, Abe fails to cure the deficiencies of Harada et al. in view of Yamamoto and Mochizuki et al. Accordingly, Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness regarding claims 16 and 17 in view of claim 12, as above.

The rejection of claims 2, 13, and 20 under 35 U.S.C. §103(a) as being unpatentable over Harada et al. in view of Yamamoto and Mochizuki et al. and further in view of Asano et al. is respectfully traversed and reconsideration is requested.

Claim 2 includes all of the limitations of claim 1 as discussed above, and Harada et al. in view of Yamamoto and Mochizuki et al. fails to teach or suggest at least the features of independent claim 1 as recited above. Similarly, Asano et al. fails to cure the deficiencies of Harada et al. in view of Yamamoto and Mochizuki et al. Accordingly, Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness regarding claim 2 in view of claim 1, as above.

Claim 13 includes all of the limitations of claim 12 as discussed above, and Harada et al. in view of Yamamoto and Mochizuki et al. fails to teach or suggest at least the features of independent claim 12 as recited above. Similarly, Asano et al. fails to cure the deficiencies of Harada et al. in view of Yamamoto and Mochizuki et al. Accordingly, Applicants respectfully submit that the Examiner has not established a *prima facie* case of obviousness regarding claim 13 in view of claim 12, as above.

Claim 20 is allowable over the cited references in that claim 20 recites a combination of elements including, for example, “depositing a liquid crystal material on the first orientation film of the first substrate, the liquid crystal material having a viscosity of greater than 100 mm²/sec; ... and heat-treating the liquid crystal material to activate the liquid crystal

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and have substantially the same characteristics as a liquid crystal material having a viscosity of 20 to 50 mm²/sec." None of the cited references, including Harada et al., Yamamoto, Mochizuki et al., or Asano et al., singly or in combination, teaches or suggests at least these features of the claimed invention. Accordingly, Applicants respectfully submit that claim 20 is allowable over the cited references. Applicants further submit that similar arguments presented above with respect to claim 12 are also applicable to claim 20.


Applicants believe the foregoing amendments place the application in condition for allowance and early, favorable action is respectfully solicited. Should the Examiner deem that a telephone conference would further the prosecution of this application, the Examiner is invited to call the undersigned attorney at (202) 496-7500.

Applicant hereby authorizes the Commissioner of Patents to charges any fees necessary to complete this filing, including any fees required under 37 C.F.R. §1.136 for any necessary Extension of Time to make the filing of the attached documents timely, or credit any overpayment in fees, to Deposit Account No. 50-0911. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. §1.136 for the necessary extension of time.

Respectfully submitted,

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